Application No. 10/770,735
GAU 1733
Filed 02/03/2006

REMARKS

The Examiner objected to claims 20 and 27. The Applicant has amended independent claims 19 and 26 to incorporate the limitations of claims 20 and 27 respectively.

The Examiner has rejected claims 1 through 8, 11, 13 through 19, 21 through 26, 28, 29, and 31 through 37 under 35 U.S.C. §103(a) as being unpatentable under Kamiyama (JP 6-320624) and further in view of Tweedie (US 6,068,725) and Gunzel (DE 3929558).

The Examiner further rejected claims 9, 10 and 30 under 35 U.S.C. §103(a) as being unpatentable under Kamiyama, Tweedie and Gunzel and further in view of Strand (US 4,768,562).

The Applicant has cancelled claims 2, 10 through 18, 20, 24 through 25 and 27 through 37. A new claim (38) has been added.

The Examiner has stated in relevant part:

"Kamiyama discloses a pipe rehabilitation in method comprising applying a liner 5 having a flange portion to a branch pipe and injecting a chemical reactant or foam grout 3 into the ground (Paragraphs 10 and 11)."

Review of Kamiyama discloses that it teaches "pouring the grout material 3 into the joint of the mains 1 such as a sewer pipe laid under the underground shown in drawing 3."

What is key is that drawings 1 through 3 (referenced within the paragraphs cited by the Examiner) disclose the grout being *conveyed through a branch pipe* and, utilizing pressure, being forced through cracks existing at the juncture of a main pipe and branch pipe. *The grout is forced from the inside of the pipe to the outside ground.* The grout is forced around an apparent preinstalled liner 5. The liner is apparently installed in a separate step.

The injection of grout from a bladder device with the branch pipe is clearly shown in drawing 4 of Kamiyama. The grout is conveyed through the pipe in a pouch. The

pouch is inverted by fluid pressure. The fluid pressure forces the grout around the flange of a previously installed liner 5 and through fissures or cracks in the pipe wall into the surround ground. Heat is not used.

This is not the Applicant's invention. Indeed, one of the objects of the Applicant's invention is minimizing the infiltration of reaction product *into* the pipe. This is accomplished by placement of an inflated bladder within the pipe annulus. The Applicant injects the reactant from the ground surface to an area proximate to the pipe outer surface.

The Applicant's invention also teaches installation of a pipe repair liner simultaneously with the injection of a reactant into the ground to form a sealing reaction product around the outer periphery of the pipe.

Figures 3A, 4B, 17B, 17C and 17D of the Applicant's invention clearly illustrate injection of a reactant *from the ground surface* to an area proximate (but exterior) to an underground pipe. The text of the Applicant's invention states at page 7, beginning at line 22:

> "Figure 3A is a schematic illustration across the longitudinal axis 350 wherein closed cell foam 600 is *injected from the ground surface* 105 through the injection mechanism 650 into the void 150 within the ground 100 adjacent to the damaged sewer pipe wall 250." (emphasis added).

Also Kamiyama does not teach using heat to form a reaction product. Tweedie US 6,068,725) does not teach or suggest radiating heat through a pipe to cure a reactant or form a reactant product injected from the ground surface to the ground surrounding the pipe.

It would be impossible to use the grout injection method of Kamiyama with the inflated bladder taught by the Applicant's invention (or with the lining method taught by Tweedie). The Applicant's method permits "installing a pipe repair material ... within the interior diameter of a sewer pipe *in combination with* injection of expanding closed cell foam proximate to the outer diameter of the sewer pipe." (Emphasis original) (See page

8 at line 8 through 11.) This is permitted because the reactant is injected into the ground outside the pipe while the pipe interior is sealed with the inflated bladder.

The Applicant has amended claim 1 to read:

1. (Currently amended) ~~An~~ A method for insitu minimization of infiltration and exfiltration of underground pipes having thickness between a first inner surface and a second outer surface comprising the following steps:

a. Inserting into a pipe an inflatable and heatable bladder in communication with a controller and power source;

b. Inflating the bladder to contact the first inner pipe surface;

c. Heating the bladder to radiate heat through the pipe thickness to the ground;

d. Injecting at least one chemical reactant into the ground from a ground surface; ~~and~~

e. ~~Removing the bladder~~. Using heat radiated through the pipe thickness to create a reaction product from the injected chemical reactant;

f. Removing the bladder.

Note again that the annulus of the pipe is first occupied by the inflated bladder. It is impossible to use the grout injection method taught be Kamiyama with the method of the Applicant's invention. There is no way to inject the grout or other reactant from within the pipe.

Independent claim 19 and 26 have similarly been amended. The method steps of these claims require the reactants to be injected into the ground from the ground surface. It is the Applicant's position that this added claim limitation is not found in Kamiyama or the other cited references. The amended claims render the Examiner §103(a) rejection as moot.

The law is clear that all of the claim limitations must be taught or suggested by the prior art. "Obviousness requires a suggestion of all limitations in a claim." CFMT,

Inc. V. Yieldup International Corp., 349 F.3d 1333, 1342, 68 USPQ2d 1940, 1947 (Fed Cir. 2003) citing In re Royka, 290 F.2d 981, 985 (CCPA 1974).

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SUMMARY

The Applicant has amended the method claims and cancelled the apparatus claims. All §112 deficiencies noted by the Examiner have been corrected. One new claim has been added.

The amended independent method claims 1, 11, and 19 contain limitations not taught or suggested by the references cited by the Examiner. It is the Applicant's position that the §103(a) rejections are now moot and the amended claims are now allowable. Such action is respectfully requested.

Respectfully submitted,

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